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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/677,450	10/02/2003	John D. Downie	SP02-274	9028

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EXAMINER
PHAN, HANH

ART UNIT	PAPER NUMBER
2613	

DATE MAILED: 09/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/677,450	DOWNIE, JOHN D.	
	Examiner	Art Unit	
	Hanh Phan	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The subject matter of this application admits of illustration by a drawing to facilitate understanding of the invention. Applicant is required to furnish a drawing under 37 CFR 1.81(c). No new matter may be introduced in the required drawing. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d).

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the features "**extracting a sequence containing a finite number of the data...**", "**a decision circuit**", "**threshold value**", "**setting the threshold values**", "**counting at least a number of ones and a number of zeros**" and "**estimating an optical BER value..**" specified in the claim 1 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet,

and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-8 are rejected under 35 U.S.C. 102(e) as being anticipated by Kaji (US Patent No. 6,609,220).

Regarding claim 1, referring to Figures 4 and 5, Kaji teaches a method for estimating the bit-error-ratio (BER) within an optical communications network via which a multiplicity of information-carrying data bits are transmitted over an optical medium,

each of the multiplicity of information-carrying data bits being designated in nomenclature as either ones or zeros, the method comprising the steps of:

extracting a sequence containing a finite number of the data bits from among that multiplicity of information-carrying data bits (i.e., col. 1, lines 19-67 and col. 2, lines 1-67);

transmitting the sequence to a decision circuit (i.e., a discriminating section 10, Fig. 5) capable of discriminating the finite number of data bits as either ones or zeros as a function for a threshold value (i.e., a level 1b of the threshold value, Fig. 5, col. 1, lines 19-67 and col. 2, lines 1-67);

setting the threshold value (i.e., col. 1, lines 19-67 and col. 2, lines 1-67);

counting (i.e., BER measuring section 20, memory 30 and calculating section 40, Fig. 5) at least a number of ones and a number of zeros associated with the finite number of data bits in the sequence at the threshold value (i.e., col. 1, lines 19-67 and col. 2, lines 1-67);

repeating the steps of setting the threshold value and counting at least the number of ones and the number of zeros associated with the finite number of data bits in the sequence at the threshold value for a plurality of different threshold values to establish a plurality of data sets, each data set reflecting at least the number of ones and the number of zeros measured as corresponding to the threshold value (i.e., col. 1, lines 19-67 and col. 2, lines 1-67); and

estimating (i.e., BER measuring section 20, memory 30 and calculating section 40, Fig. 5) an optical BER value by performing a Q-fitting algorithm on the plurality of data sets (i.e., Fig. 5, col. 1, lines 19-67 and col. 2, lines 1-67).

Regarding claim 2, Kaji further teaches the Q-fitting algorithm is characterized by the formula

$$BER(v_i) = 1/2\{\operatorname{erfc}([\mu 1 - v_i]/\sigma 1) + \operatorname{erfc}([\mu 0 - v_i]/\sigma 0)\}$$

wherein erfc represents a complementary error function, $\mu 1$ and $\mu 0$ represent mean values, and $\sigma 1$ and $\sigma 0$ represent standard deviations (i.e., col. 1, lines 19-64).

Regarding claims 3 and 4, Kaji further teaches the complementary error function is expressed by the formula

$$\operatorname{erfc}(x) = \frac{1}{\sqrt{2\pi}} \int_{x}^{\infty} e^{-2\beta^2/2}\, d\beta.$$ (i.e., col. 1, lines 19-64).

Regarding claims 5 and 7, Kaji further teaches the step of extracting a sequence containing a finite number of the data bits from among that multiplicity of information-carrying data bits is performed synchronously or asynchronously (i.e., Fig. 5, col. 1, lines 19-67 and col. 2, lines 1-67).

Regarding claims 6 and 8, Kaji further teaches wherein the steps are preformed synchronously or asynchronously (i.e., Fig. 5, col. 1, lines 19-67 and col. 2, lines 1-67).

5. Claims 1, 2 and 5-8 are rejected under 35 U.S.C. 102(e) as being anticipated by Kamalov et al (Pub. No.: US 2004/0213565).

Regarding claim 1, referring to Figure 2, Kamalov teaches a method for estimating the bit-error-ratio (BER) within an optical communications network via which a multiplicity of information-carrying data bits are transmitted over an optical medium, each of the multiplicity of information-carrying data bits being designated in nomenclature as either ones or zeros, the method comprising the steps of:

extracting a sequence containing a finite number of the data bits from among that multiplicity of information-carrying data bits (i.e., Fig. 2, pages 1 and 2, paragraphs [0009]-[0027]);

transmitting the sequence to a decision circuit (i.e., decision circuit 16, Fig. 2) capable of discriminating the finite number of data bits as either ones or zeros as a function for a threshold value (i.e., Fig. 2, pages 1 and 2, paragraphs [0009]-[0027]);

setting the threshold value (i.e., threshold generator 20, Fig. 2, pages 1 and 2, paragraphs [0009]-[0027]);

counting (i.e., counter 26, Fig. 2, pages 1 and 2, paragraphs [0009]-[0027]) at least a number of ones and a number of zeros associated with the finite number of data bits in the sequence at the threshold value;

repeating the steps of setting the threshold value and counting at least the number of ones and the number of zeros associated with the finite number of data bits in the sequence at the threshold value for a plurality of different threshold values to establish a plurality of data sets, each data set reflecting at least the number of ones and the number of zeros measured as corresponding to the threshold value (i.e., Fig. 2, pages 1 and 2, paragraphs [0009]-[0027]); and

estimating (i.e., processor 22, Fig. 2, pages 1 and 2, paragraphs [0009]-[0027]) an optical BER value by performing a Q-fitting algorithm on the plurality of data sets.

Regarding claim 2, Kamalov further teaches the Q-fitting algorithm is characterized by the formula

$$BER(v_i) = 1/2\{\operatorname{erfc}([\mu 1 - v_i]/\sigma 1) + \operatorname{erfc}([\mu 0 - v_i]/\sigma 0)\}$$

wherein erfc represents a complementary error function, $\mu 1$ and $\mu 0$ represent mean values, and $\sigma 1$ and $\sigma 0$ represent standard deviations (i.e., Fig. 2, pages 1 and 2, paragraphs [0009]-[0027]).

Regarding claims 5 and 7, Kaji further teaches the step of extracting a sequence containing a finite number of the data bits from among that multiplicity of information-carrying data bits is performed synchronously or asynchronously (i.e., Fig. 2, pages 1 and 2, paragraphs [0009]-[0027]).

Regarding claims 6 and 8, Kaji further teaches wherein the steps are preformed synchronously or asynchronously (i.e., Fig. 2, pages 1 and 2, paragraphs [0009]-[0027]).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kamalov et al (Pub. No.: US 2004/0213565) in view of Kaji (US Patent No. 6,609,220).

Regarding claims 3 and 4, Kamalov differs from claims 3 and 4 in that he does not specifically teach the complementary error function is expressed by the formula

$$\text{erfc}(x) = \frac{1}{\sqrt{2\pi}} \int_{x}^{\infty} e^{-2\beta^2/2} \partial\beta .$$

Kaji , from the same field of endeavor, likewise teaches a method for estimating the bit error rate. Kaji further teaches the complementary error function is expressed by the formula

$$\text{erfc}(x) = \frac{1}{\sqrt{2\pi}} \int_{x}^{\infty} e^{-2\beta^2/2} \partial\beta .$$

Based on this teaching, it would have been obvious to one having skill in the art at the time the invention was made to incorporate the complementary error function as taught by Kaji in the system of Kamolov. One ordinary skill in the art would have been motivated to do this since allowing increasing the quality of the signal and reducing the error signal.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hanh Phan whose telephone number is (571)272-3035.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached on (571)272-3022. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-4700.

HANH PHAN
PRIMARY EXAMINER